

## ABSTRACT

A porous inorganic substrate and method of fabricating such substrate for attaching an array of biological or chemical molecules to be used in a high-density microarray device. The substantially planar substrate comprises a porous inorganic layer adhered to a flat, rigid, non-porous, inorganic understructure having a coefficient of thermal expansion compatible with that of the porous inorganic layer. The porous inorganic layer is characterized as having dispersed throughout it a plurality of interconnecting voids as defined by a network of contiguous inorganic material, each of a predetermined mean size. The continuous inorganic material and contents of the voids exhibit a high contrast in their indices of refraction relative to each other. The substrate further comprises a uniform coating of a binding agent over at least a part of the surface area of the voids and the top surface of the porous inorganic layer.